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Effects of brisk walking and yogic practices on selected physiological variables among diabetic patients

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Abstract

The purpose of the study was to analyze the influence of brisk walking and yogic practices on selected physiological variables among diabetic patients. To achieve this purpose thirty men Type II diabetic patients from H.L.M., College, Ghaziabad, Uttar Pradesh, aged 30 – 50 years volunteered to participate in this study. Subjects were assigned into three groups namely brisk walking exercises group (N-10), yogic practices group and control group. Physiological variables such as resting pulse rate and vital capacity were selected as criterion variables. Analysis of covariance (ANCOVA) was used as statistical technique. Scheffe's test was followed as a post hoc test. The results of the study showed that there was a significance differences exist between the groups on resting pulse rate and vital capacity when compared to the control group.

Keywords: Brisk walking, yogic practices, resting pulse rate and vital capacity

Introduction

Brisk walking is a moderate-intensity exercise and has more benefits for fitness and reducing health risks than walking at an easy pace. How fast you must walk for it to be considered a brisk pace depends on your fitness level. Learn what you can do to improve your walking technique so you can boost your average walking speed.

Benefits of Brisk Walking

Brisk walking can improve cardiovascular health, muscular strength, and body composition, which can help you age more independently with a higher quality of life. Better cardiovascular health and body composition can help prevent heart disease, diabetes, cancer, and other chronic diseases.

Brisk walking may also improve your mental abilities, including work performance. Research shows that a brisk walking program can reduce subjective fatigue, increase working motivation, improve attention, and lower overall fatigue.

Compared to walking at an easier pace for longer, brisk walking provides unique benefits. The faster walking pace increases your heart rate, boosting and challenging your cardiovascular system in ways that easier walking paces do not.

Brisk Walking Speeds

One study defines a minimum speed for moderate-intensity as about 100 steps per minute for adults under age 60 (about 3 miles per hour or 4.8 kilometers per hour). If you already have a high fitness level, you may not be in a moderate-intensity exercise zone at a 3 miles per hour (4.8 kilometers per hour) pace.

You will probably have to walk at a pace of 4 miles per hour (a 15-minute mile) or faster to get into the zone. This is equivalent to 6.4 kilometers per hour. For most everyone, at 5 miles per hour (8 kilometers per hour), you will be walking reasonably fast. To achieve a 15-minute mile walking pace, you will need to walk at 4 to 5 miles per hour (6.4 to 8 kilometers per hour).

According to the Centers for Disease Control and Prevention (CDC), the ranges for different walking speeds is defined as:

Moderate pace: 2.5 to 3.5 miles per hour (4 to 5.6 kilometers per hour)

Brisk pace: 3.5 to 4 miles per hour (5.6 kilometers per hour to 6.4 kilometers per hour)

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Average Walking Speeds

This table shows average walking speeds by different age groups and sex. Note that the average walking speed declines as age increases. For most adults, the average walking speed is around 3 miles (4.8 kilometers) per hour. This starts to slow down when as adults age.

Table 1: Average Walking Speed by Age and Sex

Age	Miles (Kilometers) Per Hour, Females	Miles (Kilometers) Per Hour, Males
20-29	3.0 (4.83)	3.04 (4.89)
30-39	3.0 (4.83)	3.2 (5.15)
40-49	3.11 (5.01)	3.2 (5.15)
50-59	2.93 (4.72)	3.2 (5.15)
60-69	2.77 (4.46)	3.0 (4.83)
70-79	2.53 (4.07)	2.82 (4.54)
80-89	2.1 (3.38)	2.17 (3.49)

Achieving moderate-intensity exercise

Since the speed at which you achieve moderate intensity will be different for everyone, focus on your exertion instead. Exertion is measured by your heart and breathing rate.

For your walking pace to be brisk, you need to be breathing harder than usual. While you should be able to speak in complete sentences, you shouldn't be able to sing.

The American Heart Association defines the moderate-intensity zone as 50% to 70% of your maximum heart rate, which varies by age. The most accurate way to measure exertion is to take a heart rate reading and check a target heart rate chart.

You can use many tools to find your heart rate during exercise, from taking your pulse by hand to using an app, pulse monitor, fitness tracker, smart watch, or chest strap heart rate monitor. Fitness trackers and heart rate monitors will often show your target heart rate zone automatically, guiding you to maintain a level of exertion that will keep you in that zone.

However, you can track your exertion without any equipment using the Rating of Perceived Exertion (RPE) scale. Evaluate yourself on a scale of 6 (no exertion at all; sitting quietly) to 20 (maximum exertion, as in a hard sprint). Use measures like whether you are sweating and how heavily you are breathing to help determine your exertion level.

Techniques for faster walking

If you find your usual walking pace doesn't reach the level of brisk walking and you want to speed up, you can work on your walking technique. Many people can increase their walking speed by using better posture, stride, and arm motion. Wearing flexible athletic shoes and clothing that allows free movement will also help you speed up.

When you adopt a fast walking technique, you can expect to see a boost of 0.5 to 1 miles per hour and take two to four minutes off your time to walk a mile. Walking coach Judy Heller says she often sees walkers increase their speed even more after she shows them good brisk walking technique.

You may need to slow down at first and ensure you have the right technique that will enable you to speed up and walk briskly. This technique can be broken down into posture, arm motion, and stride.

Walking Posture

For best walking posture, follow these guidelines.

- Do not lean forward or back.
- Draw your navel in toward your spine. Keep your abdominal muscles firm, but not overly tightened.
- Keep breathing; don't hold your breath.
- Keep your eyes forward and don't look down. Focus 20

feet ahead of you.

- Relax your jaw to avoid tension in your neck.
- Shrug once and let your shoulders fall and relax, with your shoulders slightly back.
- Stand up straight, without arching your back.
- Your head should be up so your chin is parallel to the ground, reducing strain on your neck and back.
- Your head should remain level as you walk; all motion should take place from the shoulders down.

Walking Arm Motion

Using proper arm position and movement while walking can help you walk faster and increase intensity.

- Bend your arms 90 degrees at the elbow.
- Don't carry anything in your hands while walking.
- Keep your arms and elbows close to your body rather than pointing outward.
- Move your arms in opposition to your feet. When your right foot goes forward, your right arm goes back and your left arm goes forward.
- On the backswing, think of reaching for a wallet in your back pocket. While you want a good backswing, don't exaggerate it and end up leaning.
- Your arm motion should be mostly forward-and-back, not diagonal. It should also be mostly level, without reaching up past your breastbone when your arm comes forward.

Walking Foot Motion

Improve your pace from the ground up by paying attention to your foot motion while walking.

- Strike with your heel and roll through each step from heel to toe.
- Give a powerful push-off with the ball of your foot and your toes at the end of your stride.
- If you find that your foot slaps down without rolling through the step, you likely are wearing stiff soled shoes. Switch to running shoes that are flexible in the forefoot.

Walking Stride

Your walking stride is important too. Aim to take more steps of your natural stride length rather than trying to lengthen your stride.

When you do add length, it should be behind you. Keep your back foot on the ground longer and then powerfully push off with your toes.

Resist the urge to overstride when you are trying to walk faster. Your forward foot should strike closer to your body. Notice whether you are overextending your foot in front of your body.

Brisk Walking Workouts

A brisk walking pace is about 3.5 to 4 miles per hour (5.6 to 6.4 kilometers per hour). Practice your brisk walking technique as part of your regular walking workouts. When you are first changing your technique, build up your time gradually. Start by ensuring you have a good walking posture and walk at a leisurely pace to warm up for 5 minutes. Then practice your brisk walking technique for 10 minutes before resuming an easy pace.

Steadily build your time using your new technique, adding five minutes per week. You may experience muscle soreness or shin pain when you change your walking technique or shoe model.

When you can walk briskly for 15 to 30 minutes, you can use your new brisk walking technique to build fitness and ensure you get the recommended 150 minutes of moderate-intensity exercise each week.

Brisk walking is generally distinguished from running in that only one foot at a time leaves contact with the ground: for humans and other bipeds running begins when both feet are off the ground with each step. Diabetes mellitus often referred to simply as diabetes is a syndrome of disorder metabolism, usually due to a combination of hereditary and environmental causes, resulting in abnormally high blood sugar levels. All forms of diabetes have been treatable since insulin became medically available in 1921, but there is no cure. A physiological value of exercises depends upon its capacity to confer health upon the person practising it. Practice of yoga has been reported to be beneficial in treating a range of stress related disorders, improving autonomic functions, relieving symptoms of asthma, stuttering and reducing signs of oxidative stress. Practice of yogic develops a steady mind, strong will-power and sound judgment. In addition regular yogic helps extends life and enhance perception.

Methodology

The aim of the present study was to analyze the influence of brisk walking and yogic practices on selected physiological variables among diabetic patients. To achieve this purpose thirty men type II diabetic patients from H.L.M., College,

Ghaziabad, Uttar Pradesh, aged 30 – 50 years volunteered to participate in this study. Subjects were assigned into three groups namely brisk walking exercises group (N-10), yogic practices group and control group. Physiological variables such as resting pulse rate and vital capacity were selected as criterion variables. They were assessed by using Palpation method and Spiro Meter. Analysis of covariance (ANCOVA) was used as statistical technique. Scheffe's test was followed as a post hoc test. The results of the study showed that there was a significance differences exist between the groups on resting pulse rate and vital capacity when compared to the control group.

Training Schedule

Experimental Group I (Brisk walking exercises) Duration: 45 minutes (6.00 to 6.45 am), Six weeks (6 days per week). Experimental Group II (Yogic Practices) Duration: 45 minutes (6.00 to 6.45 am), Six weeks (6 days per week), Yogic practices such as Kriyas, various types of Asanas, Pranayama and Meditation. Control group did not participate any specific training.

Results and Discussions

Table 2: Results on Calculation of Analysis of Covariance on Physiological Variables Calculation of Analysis of Covariance on Resting Pulse Rate

	Brisk walking group	Yogic practices group	Control group	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre Test Mean	69.22	69.75	70.25	Between	11.0	2	5.50	1.63
				Within	193.7	27	3.38	
Post Test Mean	66.61	64.81	70.35	Between	320.7	2	160.35	34.57*
				Within	264.5	27	4.46	
Adjusted Post Test Mean	66.69	64.80	70.72	Between	302.3	2	151.15	32.59*
				Within	259.6	26	4.46	
Calculation of Analysis of Covariance on Vita l Capacity								
Pre Test Mean	3440.00	3450.00	3460.00	Between	3000.00	2	1500.00	0.01
				Within	8357000.00	27	198976.19	
Post Test Mean	3496.67	3603.33	3486.67	Between	125444.44	2	62722.22	30.52
				Within	8567000.00	27	203976.19	
Adjusted Post Test Mean	3506.74	3603.33	3476.59	Between	131511.64	2	65755.82	33.49*
				Within	80502.18	26	1963.47	

Table 3: Scheffe's post hoc analysis results

Brisk walking group	Yogic practices group	Control group	Mean difference	Reqd. C.I
66.69	64.80		1.89*	1.73
67.48		70.27	3.58*	1.73
	64.80	70.27	5.47*	1.73
Post Hoc Analysis for Vital Capacity				
3506.74	3603.33		96.59*	41.88
3506.74		3476.59	30.15	41.88
	3603.33	3476.559	126.74*	41.88

Finding of the study shows that there was a significant improvement in diabetic patients. It may be due to influence of differences existed between brisk walking group, yogic practices group and control groups on resting pulse rate and vital capacity. The significant changes in resting pulse rate and vital capacity observed in the present study suggests that brisk walking and yogic practices might have immediate effect on selected criterion variables.

Conclusion

It was concluded that the brisk walking and yogic practices programs has resulted in significant improvement on selected criterion variables as compared to control group.

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